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ABSTRACT

The purpose of this study was to develop and validate an instrument to collect student judgments regarding their teacher's credibility. Items were developed and evidence of content validity generated. A pilot sample and a final sample of high school students were administered the Source Credibility Measure (SCM) so that actual response data could be used for instrument refinement. Both pilot and final data were submitted to factor analysis to explore construct validity. Reliability scores were also generated. Intertest construct validity evidence was generated for the final data. The study resulted in generating five factors represented by 29 items. These factors were Openness, Qualification, Communication Effectiveness, Defined Expectations, and Objectivity. The estimated alpha internal consistency reliabilities generated for these dimensions ranged from .77 to .89. The 29 item, five factor SCM Questionnaire is intended to be used as a feedback tool for inservice and preservice teacher training and individual teacher self-improvement. Further developmental work is needed to test the findings of this study. (Author/RC)

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THE DEVELOPMENT AND VALIDATION OF AN INSTRUMENT THAT MEASURES STUDENT PERCEPTIONS OF TEACHER CREDIBILITY

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THE DEVELOPMENT AND VALIDATION OF AN INSTRUMENT THAT MEASURES STUDENT PERCEPTIONS OF TEACHER CREDIBILITY[1]

Introduction

From the time that Hovland and his colleagues (1951, 1952, 1953) conducted the Yale Studies in Communication and Persuasion, investigations concerning the credibility of a source have received considerable attention. These investigations have normally centered around the question: What makes a source (normally a person) believable in the eyes of others? Berlo, et al. (1970, p. 563) have explained the importance of "source credibility" in this way.

> This variable, the source's role in communication effectiveness, has been given many names: ethos, prestige, charisma, image, or, most frequently, source credibility. Whichever label is used, research consistently has indicated that the more of "it" the communicator is perceived to have, the more likely the receiver is to accept the transmitted information.

The amount or degree of credibility a source (person) is believed to have can be judged in one of two ways: (1) according to static attributes of that person, such as his height or tone of voice; or (2) according to the perceptions of others, such as perceived expertness or perceived dynamism. While some empirical evidence suggests that a person's static attributes contribute to his credibility, most investigators agree that source credibility is a fluid, changing entity, and that it is best measured by assessing the

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[1] The research reported in this paper is more fully discussed in Stephen D. Lapan, The Development and Validation of an Instrument that Measures Student Perceptions of Teacher Credibility, unpublished doctoral dissertation, The University of Connecticut, 1972.

perceptions of others. Rosnow and Robinson (1967) have summarized this issue by noting that whether or not a communicator is credible depends on the point of view of the recipient of his communication. Also, Karlins and Abelson (1970, p. 109) emphasized this same point when they suggested that "...credibility is in the eye of the beholder."

Utilizing this conceptual framework, then, researchers were able to empirically derive a number of dimensions or perceived characteristics which could be associated with making a source appear credible. For example, Berlo, et al. (1970), in their factor analytic studies generated three independent constructs considered to be indices of source credibility: "perceived safety," "perceived qualification," and "perceived dynamism." Also, Andersen and Clevenger (1963) described "perceived status" as a significant factor, while Bettinghaus (1961, p. 142) suggested that

> ...effectiveness in delivery contributes not only to the credibility of the speaker, but also to the persuasiveness of the speaker in achieving acceptance of his message.

Many such variables were identified for use in this instrument development study, some proving to be applicable in the classroom setting while others were not.

Teacher as a Source of Credibility

In an educational setting, source credibility becomes an important factor when considered from the perspective of how much of "it" teachers are perceived to have. It is well documented, for example, that classroom teachers invest a large portion of class time in their role as message senders. Bellack and Davitz (1963), Flanders (1965), and Steele, et al. (1970) have all shown that teachers spend at least two-thirds of their class time communicating to the students. Considering this extensive message-sending role

along with the evidence that a receiver (student) is more likely to accept information if the source is perceived as credible, it logically follows that a teacher's effectiveness can be significantly influenced by the degree of credibility he is perceived to have.

Thus, it is reasoned that teacher credibility should be considered a legitimate factor in assessing classroom instruction. Based on this assumption, measuring student perceptions of teacher credibility was identified as the primary focus for this investigation.

Purpose of the Study

The purpose of this investigation was to develop and validate an instrument which would measure the degree of credibility a teacher was perceived to have. This Source Credibility Measure (SCM) was constructed so that students could complete it by rating their teacher for a given class. The SCM contained items which represented factors intended to define source credibility.

Population for the Study

Two samples of high school students representing grades 9, 10, 11, and 12 were drawn in the course of this study. For the pilot investigation with the original 72 item Source Credibility Measure (SCM), 225 students representing 14 classes were selected from two available high schools in Connecticut. One of these schools was from a suburban community and the other was located in a primarily urban area.[1] For the final field test with the 32 item SCM, 1477

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[1] Although there were no rural classes in the pilot sample, it had no apparent effect on the results of the study.

students[1] representing 68 classes were selected from four high schools in Illinois. These schools represented urban, suburban, and rural communities.

Procedures

The procedures used in this instrument development study were employed to produce evidence of content and construct validity. Utilizing information gathered from available credibility literature in addition to data collected from 211 high school students,[2] 126 items were developed representing 12 dimensions of credibility. These items were first submitted to a judgmental sorting procedure on the basis of item content involving six independent judges. This procedure retained 76 items representing 7 of the original 12 categories. These items were then submitted to a group of 10 "expert" judges composed of professors and informed graduate students in the field of communication. These judges were requested to independently assess the item relevance as well as category fitness.

As a result, items were retained representing six dimensions. To increase the internal consistency reliabilities of the SCM scales, 16 new items were written for selected categories.

This 72 item pilot Source Credibility Measure (SCM) was organized so that students completing the instrument would rate their teacher by responding to each item on a 5-point Likert Scale (Likert, 1932). The pilot SCM contained six dimensions which survived the two sorting procedures.

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[1]This large student total was used to protect against teacher self-selection bias. This was described by Rosenthal and Rosnow (1969, p. 60) when they noted that "The potential biasing of using volunteer samples has been clearly illustrated..." Also, this large sample was drawn so that the teachers could be used as the unit of measure for correlations. However, such analyses were eventually judged to be beyond the scope of this investigation.

[2]These students were interviewed with an audio tape recorder in groups of 4 to 12 utilizing a structured interview format developed after Berlo, et al. (1970).

The pilot SCM was then administered to 225 high school students in order to obtain actual response data for further analysis and revision. These data were submitted to an item level principal components analysis followed by an oblique transformation (obliquimax, Hofmann, 1970) to reduce the factorial complexity. Alpha internal consistency reliabilities were estimated for the derived factors (Stanley, 1957).

The refined version of the SCM which contained five factors represented by 32 items was administered to 68 high school classes represented by 1477 students in order to further examine construct validity. As with the pilot SCM data, these final field test results were submitted to principal components analysis and estimated alpha internal consistency reliability scores were generated.

For both the pilot and final field test data analysis, two criteria were employed in deciding which factors to retain. First, a factor was judged acceptable if it was represented by two or more interpretable items, and second, these items must have obtained loadings of .40 or above. Also, in both cases, the primary axes intercorrelations were inspected to insure that the factors were sufficiently distinct from one another. In the special case of refining the pilot instrument after statistical analysis, where it was found that factors were represented by only two or three items, items of similar content were added for the purpose of increasing the internal consistency reliabilities for those factors.

Finally, additional evidence of construct validity was generated by comparing the results of the 32 item SCM with 15 additional items[1] completed

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[1] These 15 items purported to represent three empirically generated factors related to source credibility perception (Berlo, et al., 1970).

by the same student sample (N=1477). These additional response data were submitted to principal components analysis followed by an oblique rotation. The derived factors were then correlated with the dimensions generated from the 32 item principal components solution. Predictions were made with regard to the correlations expected between the factors represented by the 32 items and those derived from the 15 items.

Results and Interpretations

The response data from the pilot sample (N=225) was submitted to a principal components analysis followed by an oblique rotation. The pilot Source Credibility Measure (SCM) was shown to contain five interpretable independent constructs. After obtaining measures of estimated alpha internal consistency reliabilities for each of the factors, items were added to increase the internal consistency of two of the factors. This revised instrument was then administered to a final field test sample (N=1477) in order to gather actual response data for further analysis.

Table 1 provides a tabulation of the original pilot SCM factors and the number of items representing each of those dimensions along with a listing of the revisions made due to the results of the statistical analysis. Table 1 also contains the list of the five remaining SCM factors to be examined in the final field test of the instrument.

A 32 by 32 item intercorrelation matrix was generated from the response data obtained from the 1477 students. The correlation matrix was then submitted to principal components analysis followed by an oblique rotation, which resulted in a six factor solution accounting for 59 percent of the total test variance. Five of the six components provided meaningful interpretations. As with the pilot SCM data, factors were retained if they contained at least two meaningful items with loadings of .40 or higher. An examination of the

Table 1

Pilot SCM Factors, Revisions Due to Statistical Analysis, and Final Field Test SCM Factors

Original Factors	Number of Items	Revisions	Final Factors	Number of Items
1. Openness	12	2 items rejected	I. Openness	10
2. Qualification	12	5 items rejected	II. Qualification	7
3. Communication Effectiveness	12	7 items rejected	III. Communication Effectiveness	5
4. Defined Expectations	12	9 items rejected 2 new items added	IV. Defined Expectations	5
5. Objectivity	12	10 items rejected 3 new items added	V. Objectivity	5
			TOTAL	32
6. Confidence	12	11 items rejected factor deleted		
TOTAL	72			

primary pattern matrix revealed that a high degree of simple structure was achieved (see Table 2). Also, 29 out of the 32 items were retained in the solution. A summary of factor names, sample items, and item loadings for each factor can be found in Table 3. (An excerpt from the actual resulting 29 item SCM showing format, directions, and sample items can be found in Appendix A.)[1]

The factorial independence of the five dimensions derived in this solution is demonstrated by the correlations in Table 4. The intercorrelations of the primary axes range from moderate to low, and although five of the ten correlations are above .40 it does not make psychological sense to collapse four of the relationships revealed. Also, each of the five factors had acceptable internal consistency reliabilities, which supported considering them separately in this investigation. However, the .47 correlational relationship found between Factor I: Openness and Factor V: Objectivity, deserves further consideration. Because of their content-relatedness, further developmental study would demand attention to the possibility of collapsing these two dimensions.

The alpha internal consistency reliabilities for the five derived dimensions were found to range from .89 to .77. Table 5 lists the scale numbers and labels, the number of items representing each scale, and the estimated alpha internal consistency reliabilities for each of the factors.

Factor Interpretations

It is important to note that the factors appearing as a part of the SCM each have specific meanings which are represented by the items that each dimension contains. Also, these factors are better understood if it is kept

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[1]The actual 29 item SCM is available only with the author's permission.

Table 2

Primary Pattern Matrix for Derived Principal Components Solution Using an Obliquimax Transformation (Final Field Test Sample)

Item	Factor 1	2	3	4	5
1	73				
2					
3				37	
4		81			
5			77		
6			53		
7					75
8		74			
9	86				
10	44				
11				82	
12		86			
13			68		
14					55
15	83				
16					
17		50			
18			71		
19					68
20		59			
21	79				
22					72
23	45				
24		78			
25					
26	66				
27			80		
28					62
29	61				
30				84	
31	69				
32		63			

NOTE: All loadings have been multiplied by 100. Reversed items were reflected for interpretation. All loadings less than .40 were deleted.

Table 3

Summary of Factor Names, Item Loadings, and One Sample Item Stem for Each Factor

Factor I: Openness

Item	Sample Stem	Loading
9	Encourages your comments on how the class could be improved	.86
15		.83
21		.79
1		.73
31		.69
26		.66
29		.61
23		.45
10		.44

Factor II: Qualification

Item	Sample Stem	Loading
12	Is well trained in the subject area of the class	.86
4		.81
24		.78
8		.74
32		.63
20		.59
17		.50

NOTE: Reversed items were reflected for interpretation.

Table 3 (Continued)

Summary of Factor Names, Item Loadings, and
One Sample Item Stem for Each Factor

Factor III: Communication Effectiveness

Item	Sample Stem	Loading
27	Presents material in a way that makes it hard to understand	.80
5		.77
18		.71
13		.68
6		.53

Factor IV: Defined Expectations

Item	Sample Stem	Loading
3	Lets you know how well you are doing in the class	.87
30		.84
11		.82

Factor V: Objectivity

Item	Sample Stem	Loading
7	Gives good grades only to students he or she likes	.89
22		.72
19		.68
28		.62
14		.55

NOTE: Reversed items were reflected for interpretation.

Table 4

Intercorrelation of Primary Axes
(Final Field Test Sample)

Factor	Factor 1	2	3	4	5
1					
2	36				
3	56	44			
4	39	30	38		
5	47	48	47	31	

NOTE: All entries have been multiplied by 100. Negative signs were deleted because they were due to reverse item stems.

Table 5

Scales, Number of Items, and Estimated Alpha
Internal Consistency Reliabilities for Final Field Test Data

Derived Factor	Number of Items	Estimated Alpha Internal Consistency Reliabilities
I. Openness	9	.89
II. Qualification	7	.84
III. Communication Effectiveness	5	.84
IV. Defined Expectations	3	.83
V. Objectivity	5	.77
TOTAL	29	

in mind that their application is in primarily an educational setting.

Factor I (35% of total variance) was called Openness. The nine items loading in this dimension suggest student perceptions regarding the teacher's willingness to accept comments and criticism about the way the class is run. A teacher receiving a high rating on this factor would be one who was perceived as encouraging students to express their likes and dislikes about the subject area or methods used in the class. The teachers were rated by the students on such items as "...encourages your comments on how the class could be improved" and "...considers what students have to say with an open mind."

Factor II (8% of total variance) was named Qualification. The seven items in this factor reflected student perceptions of a teacher's ability. Teachers receiving high scores on this dimension were perceived to be experienced in their field of study and exhibited a knowledge of the subject taught in the class. The students rated their teachers on this dimension by indicating whether or not they believed them to be "...well trained in the subject area of the class."

Factor III (5% of total variance) was categorized as Communication Effectiveness. Here students were requested to evaluate how clear and well organized the teacher was in presenting material in the class. Also, teachers did well on this factor if they were seen as making sure the students understood presentations before continuing.

A teacher would be rated high on Factor IV (5% of total variance), Defined Expectations, if that teacher made it clear what he or she expected of the students. More specifically, if teachers were rated high on this factor, they would be perceived by students as communicating clearly how well the students were doing in the class. This would mean that the teachers had expressed what they expected of the students by telling them how they

had been evaluated. Teachers were seen by the students as making their expectations clear when these teachers were rated high on the item "...lets you know how well you are doing in the class." On the other hand, teachers who were seen as not defining their expectations were described by the item "...doesn't let you know how you are doing until grades come out."

Factor V (4% of total variance) was designated as Objectivity and was characterized by the teacher behaving in a fair manner according to the students. If a teacher were to be rated highly on this dimension, it would mean that he or she was perceived as evaluating students in an even-handed way. The teachers were rated on items such as "...gives you good grades if you do good work" and "...grades class members according to how popular they are." The teacher would be considered objective if he or she received a high rating on the first item mentioned above and a low rating on the second item.

Additional Evidence of Construct Validity

The final field test sample (N=1477) was requested to complete 15 items in addition to the 32 item SCM. These 15 items represented three factorial dimensions empirically derived by Berlo, et al. (1970, p. 574), which were Safety, Qualification, and Dynamism. Scale scores were derived from the response data for the five dimensions on the SCM as well as the three dimensions from the Berlo study.

A priori predictions were hypothesized on the basis of content and the correlations in all cases were expected to range from moderate to high. These correlational predictions can be found in Table 6.

By generating an 8 by 8 intercorrelational matrix to obtain evidences of the relationship between the five SCM scales and the three scales on the Berlo instrument, evidence of inter-test construct validity could be examined. Table 7 presents the 8 by 8 intercorrelational matrix.

Table 6

Hypothesized Intercorrelations Predicted Between the Five SCM Scales and the Three Berlo Scales

SCM Factors	Berlo Factors VI Safety	VII Qualification	VIII Dynamism[a]
I. Openness	++	+	+
II. Qualification[b]	+	++	+
III. Communication Effectiveness	+	+	+
IV. Defined[b] Expectations	+	+	+
V. Objectivity	++	+	+

NOTE: The double plus (++) indicates a strong positive correlation predicted, and one plus (+) indicates a moderate positive prediction.

[a]Although the dynamism factor was ruled out as a distinct category of the SCM, moderate intercorrelations were predicted because some items within the SCM factors were judged to be conceptually similar to dynamism items.

[b]Although these factors are not specifically named in the Berlo Scales, moderate intercorrelations with the three Berlo factors were expected because of content similarities.

Table 7

Intercorrelation Matrix of Eight Scales (5 SCM and 3 Berlo)

Factor	1	2	3	4	5	6	7	8
SCM Categories:								
I. Openness								
II. Qualification	42							
III. Communication Effectiveness	65	50						
IV. Defined Expectations	43	33	43					
V. Objectivity	55	55	56	38				
Berlo Categories:								
VI. Safety	68	57	63	40	66			
VII. Qualification	46	76	48	32	53	65		
VIII. Dynamism	45	44	46	29	36	47	52	

NOTE: All entries have been multiplied by 100. $p > .01$ for all entries.

By examining Table 7 it can be seen that SCM scales I, II, and V were associated with substantial evidence of construct validity when correlated with the three Berlo scales. It can also be noted that while SCM Factor III obtained at least moderate evidence of construct validity, only slight evidence was found for SCM Factor IV. Finally, it should be noted that dynamism, as measured by the Berlo scale, was not well represented in the SCM. This could be due either to its inapplicability to the classroom setting, or possibly because it content was not adequately sampled during the early stages of this investigation.

Uses and Implications

The Source Credibility Measure as it is presently constituted should have wide use in the area of teacher self-evaluation. By generating item means and scale scores the classroom instructor can obtain trustworthy information regarding student perceptions of his/her credibility.

The SCM might also be utilized in teacher training programs as one important source of feedback data for improvement. Knowledge of these credibility factors could provide useful information as the potential teacher experiments with alternative teaching styles.

Studies should be conducted to develop further evidence of the SCM's validity and reliability. Known groups techniques might be employed as well as test-retest methods.

Finally, two other issues should definitely be explored. The first is to examine the relationship between teacher credibility and student learning, and the second is to further investigate the trustability of student judgments about teaching behavior.

(SCM)

APPENDIX A

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Do Not Put Your Name On
This or Your Answer Sheet

Directions

The statements on these sheets ask you to describe your teacher for this class. Each of these statements is followed by the numbers 1, 2, 3, 4, and 5. This is what these letters mean:

1. Almost Never True. This statement about what my teacher says or does is almost never true.

2. Seldom True. This statement about what my teacher says or does is only true occasionally.

3. True About Half the Time. This statement about what my teacher says or does is true about half of the time.

4. True Most of the Time. This statement about what my teacher says or does is true most of the time.

5. Almost Always True. This statement about what my teacher says or does is true almost all of the time.

Read Each Statement Below

On the card provided punch out the letter that best describes your teacher for each of these statements. Be sure to answer every statement. Also, be sure not to punch more than one answer for each statement.

Begin each statement with: "The teacher for this class..."	Almost Never True	Seldom True	True About Half the Time	True Most of the Time	Almost Always True
3. ...lets you know how well you are doing in the class	1	2	3	4	5
7. ...gives good grades only to students he or she likes.	1	2	3	4	5
9. ...encourages your comments on how the class could be improved.	1	2	3	4	5
12. ...is well trained in the subject area of the class.	1	2	3	4	5
27. ...presents material in a way that makes it hard to understand.	1	2	3	4	5

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